

INSTRUCTIONS FOR CREATING YOUR COMMUNITY’S ORDINANCE

1) PROVIDE COMMUNITY SPECIFIC INFORMATION AS REQUESTED IN BRACKETS

This model ordinance contains references in *{red brackets}* that must be replaced with community specific information such as your community's name, address, or name of the responsible party.

2) UPDATE CROSS REFERENCES

Cross references to other sections are shown in red throughout this document to facilitate location for ensuring changes are made to match actual numbering used by your community and are not intended to reflect a suggested final format.

3) DETERMINE IF YOUR COMMUNITY WANTS TO ADOPT HIGHER STANDARDS RECOMMENDED BY THE STATE OF NEVADA

This model ordinance meets the minimum standards required to participate in the National Flood Insurance Program. Community adoption of higher standards can be applied towards credit under the Community Rating System (CRS) program and result in reduced premiums for the entire community. The State of Nevada recommends:

- **Daily Fine** – Appendix 2.0 A recommends a substantial daily fine for each day violation continues.
- **Determining BFE’s in Unnumbered A Zones** - Appendix 2.0 B requires, in the absence of any other sources, that the community develop base flood elevations using FEMA 265 guidance (Managing Floodplain Development in Approximate Zone A Areas, A guide for Obtaining and Developing Base (100-year) Flood Elevations, 1995).
- **Limiting Increase in Base Flood Elevation** – Appendix 2.0 C decreases the allowable increase in base flood elevations due to cumulative development from one (1) foot to one-half (1/2) foot.
- **Freeboard** – - Appendix 2.0 D increases the required elevation and floodproofing requirement from zero (0) to two (2) feet above base flood elevation or depth indicated on the FIRM.
- **Determining Market Value of Existing Structures** – Appendix 2.0 E defines a specific method for determining Market Value of existing structures.
- **Increased Cost of Compliance (ICC) Coverage—Repetitive Loss Provisions** – Appendix 2.0 F provides the required definition of Substantial Damage to make

Increased Cost of Compliance flood insurance coverage available in repetitive loss situations.

- **Non-conversion of Enclosed Areas Below the Lowest Floor** – Appendix 2.0 G provides the community a mechanism to ensure that areas below the lowest floor will not be converted to living space without first becoming fully compliant with floodplain management regulations.

5) DETERMINE IF YOUR COMMUNITY HAS SPECIAL REQUIREMENTS

- **Alluvial Fan Advisory** – Appendix 1.0 provides a description of alluvial fan flooding and specifies in writing that FEMA will not approve a Letter of Map Revision based on Fill (LOMR-F) for structures on an alluvial fan.
- **Crawlspace Construction** – Appendix 3.0 A defines construction criteria from Technical Bulletin 11-01 (Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, 2001) to allow for crawlspace construction that will not be considered a violation of Federal floodplain management regulations. Without this language, a crawlspace constructed within special flood hazard areas was considered by FEMA to meet the definition of “basement” (subgrade on all sides) and was therefore a violation.
- **Garages and Accessory Structures** – Appendix 3.0 B contains the definition for accessory structures and construction requirements to allow for permitting of an accessory structure within special flood hazard areas without a variance. Appendix 3.0 B also provides specific language for attached and unattached garages to allow for permitting of an unattached garage within special flood hazard area without a variance.
- **Mudslide (i.e., mudflow) Prone Areas (Zone M)** – Appendix 3.0 C provides definitions and development requirements when Mudslide Prone Areas (Zone M) have been identified in a community.
- **Erosion Prone Areas (Zone E)** – Appendix 3.0 D provides definitions and development requirements when Erosion Prone Areas (Zone E) have been identified in a community.

6) PRIOR TO ADOPTION, SUBMIT DRAFT TO:

- Other community departments, including Attorney’s office.
- State Floodplain Manager, Nevada Division of Water Resources or FEMA Region IX for review and approval.

7) AFTER ADOPTION SEND:

- A copy of the adopted ordinance, with signature page(s), certified by the City/County Clerk to FEMA Region IX
- A copy of the adopted ordinance, with signature page(s) to the State Floodplain Manager, Nevada Division of Water Resources.

MODEL

FLOODPLAIN MANAGEMENT

ORDINANCE

FOR

NEVADA COMMUNITIES

by
Nevada Floodplain Management Program
Nevada Division of Water Resources
901 South Stewart Street, Suite 2002, Carson City, Nevada 89701

July 2009

FLOODPLAIN MANAGEMENT ORDINANCE

SECTION 1.0 STATUTORY AUTHORIZATION, FINDINGS OF FACTS, PURPOSE AND METHODS

1.1 STATUTORY AUTHORIZATION

The legislature of the State of Nevada in Nevada Revised Statutes 278.020, 244A.057, and 543.020 confers upon local government units authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Therefore, the *{governing body}* of *{county or municipality}* does hereby adopt the following floodplain management regulations.

1.2 FINDING OF FACT

- A. The flood hazard areas of *{county or municipality}* are subject to periodic inundation which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare.
- B. These flood losses are caused by structures that are inadequately elevated, floodproofed, or protected from flood damage. The cumulative effects of obstructions in areas of special flood hazards, which increase flood heights and velocities, also contribute to flood losses.

1.3 STATEMENT OF PURPOSE

It is the purpose of this ordinance to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- A. Protect human life and health;
- B. Minimize expenditure of public money for costly flood control projects;
- C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- D. Minimize prolonged business interruptions;

- E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in areas of special flood hazards;
- F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blighted areas caused by flood damage;
- G. Ensure potential buyers are notified of property located in areas of special flood hazards;
- H. Ensure those who occupy the areas of special flood hazards assume responsibility for their actions; and
- I. Maintain qualifying standards for participation in the National Flood Insurance Program.

1.4 METHODS OF REDUCING FLOOD LOSSES

To accomplish its purposes, this ordinance includes methods and provisions to:

- A. Restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;
- B. Require that land uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- C. Control the alteration of natural floodplains, alluvial fans, stream channels, and natural protective barriers, which help accommodate or channel flood waters;
- D. Control filling, grading, dredging, and other development which may increase flood damage; and
- E. Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

SECTION 2.0 DEFINITIONS

Unless specifically defined below, words or phrases used in this ordinance shall be interpreted so as to give them the meaning they have in common usage and to give this ordinance its most reasonable application. A local ordinance need only include definitions of words actually used in the ordinance.

Accessory Use	A use which is incidental and subordinate to the principal use of the parcel of land on which it is located.
Alluvial Fan	A geomorphologic feature characterized by a cone or fan-shaped deposit of clay, silt, sand, gravel, and boulders that have been eroded from mountain slopes, transported by flood flows, and deposited on the valley floor.
Alluvial Fan Flooding	Flooding occurring on the surface of an alluvial fan or similar land form which originates at the apex and is characterized by high-velocity flows: active processes of erosion, sediment transport, deposition, and unpredictable flow paths.
Anchoring	A series of methods used to secure a structure to its footings or foundation wall so that it will not be displaced by flood or wind forces.
Apex	The highest point on an alluvial fan or similar landform below which the flow path of the major stream that formed the fan becomes unpredictable and alluvial fan flooding can occur.
Appeal	A request for a review of the local Floodplain Administrator's interpretation of any provisions of this ordinance.
Area of Shallow Flooding	Designated Zones AO and AH on a community's Flood Insurance Rate Map (FIRM) with a one-percent or greater annual chance of flooding to an average depth of one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.
Area of Special Flood Hazard	See "Special Flood Hazard Area."
Base Flood	A flood which has a one percent chance of being equaled or exceeded in any given year. (Also called the "100-year flood").
Base Flood Elevation	The height in relation to mean sea level expected to be reached by the waters of the base flood at pertinent points in the floodplain of riverine areas.

Basement	Any area of the building having its floor subgrade (below ground level) on all sides. A sub grade crawlspace is considered a basement unless it meets the minimum technical requirements defined in FEMA Technical Bulletin 11-01 (Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, 2001) and the community has adopted the standards of
Building	See structure.
Community	Any state or area or political subdivision thereof, or any Indian tribe or authorized tribal organization, or authorized native organization, which has authority to adopt and enforce flood plain management regulations for the areas within its jurisdiction.
Community Rating System (CRS)	A program developed by FIA to provide incentives for those communities in the Regular Program that have gone beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.
Conditional Letter of Map Amendment (CLOMA)	A letter from FEMA stating that a proposed structure that is not to be elevated by fill would not be inundated by the base flood if built as proposed.
Conditional Letter of Map Revision (CLOMR)	Procedures by which contractors, developers and communities can request review and determination by the Federal Insurance Administrator of scientific and technical data for a proposed project, when complete and functioning effectively would modify the elevation of individual structures and parcels of land, stream channels, and floodplains on the FIRM.
Conditional Letter of Map Revision (Based on Fill) (CLOMR-F)	A letter from FEMA stating that a parcel of land or proposed structure that is to be elevated by fill would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed.
Critical Structures	Any structure for which even a slight chance of flooding would reduce or eliminate its designed function of supporting a community in an emergency. Fire stations, hospitals, municipal airports, police stations, communication antennas or towers, elder care facilities (retirement homes) fuel storage facilities, schools designated as emergency shelters, fresh water and sewage treatment facilities are some examples of critical structures.
Date of Construction	The date that the building permit was issued provided the actual start of construction, repair, reconstruction, or improvement was within 180 days of the permit date.
Designated Floodway	The channel of a stream and the portion of the adjoining floodplain designated by a regulatory agency to be kept free of further development to provide for unobstructed passage of flood flows.

Development	Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials located within the area of special flood hazard.
Digital Flood Insurance Rate Map (DFIRM)	The official map, in digital format, on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community. The DFIRM is the legal equivalent of the FIRM in communities where a DFIRM is available (see Flood Insurance Rate Map).
Dry Floodproofing	A floodproofing method used to design and construct buildings so as to prevent the entrance of floodwaters.
Elevation Certificate	The Elevation Certificate is required in order to properly rate post-FIRM buildings, which are buildings constructed after publication of the Flood Insurance Rate Map (FIRM), for flood insurance Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, and AR/AO. The Elevation Certificate is not required for pre-FIRM buildings unless the building is being rated under the optional post-FIRM Flood insurance rules.
Enclosure	That portion of an elevated building below the lowest elevated floor that is either partially or fully shut-in by rigid walls.
Encroachment	The advance or infringement of uses, plant growth, excavation, fill, buildings, permanent structures or development, storage of equipment and materials, or any other physical object placed in the floodplain, that hinders the passage of water or otherwise affects flood flows.
Erosion	The process of the gradual wearing away of any landmass. This peril is not per se covered under the program. (See Flood-related erosion).
Existing Manufactured Home (mobile Home) Park Or Subdivision	A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.
Expansion to a Manufactured Home (mobile Home) Park	The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, construction of streets, and either final site grading or the pouring of concrete pads).

Federal Emergency Management Agency (FEMA)	The federal agency under which the National Flood Insurance Program (NFIP) is administered.
Federal Insurance Administration (FIA)	The government unit, a part of Federal Emergency Management Agency (FEMA), that administers the National Flood Insurance Program (NFIP).
Flash Flood	A flood that crests in a short period of time and is often characterized by high velocity flows. It is often the result of heavy rainfall in a localized area.
Flood, Flooding Or Flood Waters	A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of floodwaters; the unusual and rapid accumulation or runoff of surface waters from any source and mudslides (i.e., mudflows) and the condition resulting from flood-related erosion.
Flood Control	Keeping flood waters away from specific developments or populated areas, areas by the construction of flood storage reservoirs, channel alterations, dikes and levees, bypass channels, or other engineering works.
Flood Hazard Boundary Map (FHBM)	An official map of a community, issued by the Administrator, where the boundaries of the flood, mudslide (i.e., mudflow) related erosion areas having special hazards have been designated as Zones A, M, and /or E.
Flood Insurance Rate Map (FIRM)	Official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community. Includes Digital Flood Insurance Rate Map (DFIRM) in communities where a DFIRM is available (see Digital Flood Insurance Rate Map).
Flood Insurance Study (FIS)	The official report provided by the Federal Insurance Administration that includes flood profiles, the Flood Insurance Rate Map, and the water surface elevation of the base flood.
Floodplain and Flood-Prone Area	Any land area susceptible to being inundated by waters from any source. (See Flooding).
Floodplain Administrator	The community official designated by title to administer and enforce the floodplain management regulations. The Floodplain Administrator for <i>{community, governing body}</i> is defined in Sub-section 4.1 (Designation of the Local Floodplain Administrator) of this ordinance to be the <i>{position title}</i> .
Floodplain Management	The operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and

enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works and floodplain management plans, regulations and ordinances.

**Floodplain
Management
Regulations**

This ordinance, and any federal, state or local regulations plus community zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a grading and erosion control) and other applications of police power which control development in flood-prone areas to prevent and reduce flood loss and damage.

Floodproofing

Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved property, water and sanitary facilities, structures and their contents. Refer to FEMA Technical Bulletins TB-1 (Openings in Foundation Walls and Walls of Enclosures, 2008), TB-3 (Non-residential Floodproofing – Requirements and Certification, 1993), and TB-7 (Wet Floodproofing Requirements, 1993) for Guidelines on dry and wet floodproofing.

Floodway

The channel of a river or other watercourse and the adjacent land area that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation. Also referred to a "Regulatory Floodway."

**Flood Insurance
Risk Zone
Designations**

The zone designations indicating the magnitude of the flood hazard in specific areas of a community. See Special Flood Hazard Area.

Zone A

Special Flood Hazard Areas inundated by the 100-year flood; base flood elevations are not determined.

**Zone A1-30
and Zone AE**

Special Flood Hazard Areas inundated by the 100-year flood; base flood elevations are determined.

Zone AO

Special Flood Hazard Areas inundated by the 100-year flood; with flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths are determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AH

Special Flood Hazard Areas inundated by the 100-year flood; flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations are determined.

Zone AR

Special Flood Hazard Areas that result from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection.

Zones AR / A1-30, AR / AE, AR / AH, AR / AO, and AR / A	Special Flood Hazard Areas that result from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection. After restoration is complete, these areas will still experience residual flooding from other flooding sources.
Zone A99	Special Flood Hazard Areas inundated by the 100-year flood to be protected from the 100-year flood by a Federal flood protection system under construction; no base flood elevations determined.
Zone B and Zone X (shaded)	Areas of 500-year flood; areas subject to the 100-year flood with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected by levees from the base flood.
Zone C and Zone X (unshaded)	Areas determined to be outside the 500-year floodplain.
Zone D	Areas in which flood hazards are undetermined.
Footing	The enlarged base of a foundation wall, pier, or column, designed to spread the load of the structure so that it does not exceed the soil bearing capacity.
Foundation	The underlying structure of a building usually constructed of concrete that supports the foundation walls, piers, or columns.
Foundation Walls	A support structure that connects the foundation to the main portion of the building or superstructure.
Fraud/ Victimization	Related to Variances of this ordinance, the variance granted must not cause fraud on or victimization to the public. In examining this requirement, the <i>{community, governing body}</i> will consider the fact that every newly constructed building adds to government responsibilities, and remains a part of the community for fifty to one hundred years. Buildings permitted to be constructed below the base flood elevation are subject during all those years to increased risk of damage from floods, while future owners of the property and the community as a whole are subject to all the costs, inconvenience, danger, and suffering that those increased flood damages bring. Additionally future owners may be unaware of the risk potential to the property due to flood damage and the extremely high rates for flood insurance.
Freeboard	A margin of safety usually expressed in feet above a flood level for purposes of flood plain management. Freeboard tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

Functionally Dependent Use	Means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only marina facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and boat building and boat repair facilities, but does not include long-term storage or related manufacturing facilities.
Governing Body	The local governing unit, county or municipality that is empowered to adopt and implement regulations to provide for public health, safety and general welfare of its citizenry.
Hardship	Related to Variances of this ordinance. The exceptional hardship would result from a failure to grant the requested variance. The <i>{governing body}</i> requires the variance be exceptional, unusual, and pertain <u>only</u> to the property involved. Mere economic or financial hardship alone is <u>not</u> exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors likewise cannot, as a rule, qualify as an exceptional hardship. All of these problems can be resolved through other means without granting a variance, even if the alternative is more expensive, or requires the property owner to build elsewhere or put the parcel to a different use than originally intended.
Highest Adjacent Grade	The highest natural elevation of ground surface prior to construction next to the proposed walls of a structure.
Historic Structure	Any structure that is: <ol style="list-style-type: none"> 1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register; 2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; 3. Individually listed on a State inventory of historic places in states with historic preservation programs which have been approved by the Secretary of Interior; or 4. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either by an approved State program as determined by the Secretary of the Interior or directly by the Secretary of the Interior in states without approved programs.
Hydraulics	The science that deals with practical applications of water in motion.

Hydrodynamic Loads	Forces imposed on structures by floodwaters due to the impact of moving water on the upstream side of the structure, drag along its sides, and eddies or negative pressures on its downstream side.
Hydrology	The science of the behavior of water in the atmosphere, on the earth's surface and underground.
Hydrostatic Loads	Forces imposed on a flooded structure due to the weight of the water.
Letter of Map Amendment (LOMA)	The procedure by which any owner or lessee of property who believes his property has been inadvertently included in a Special Flood Hazard Area can submit scientific and technical information to the Federal Insurance Administrator for review to remove the property from said area. The Administrator will not consider a LOMA if the information submitted is based on alteration of topography or new hydrologic or hydraulic conditions since the effective date of the FIRM.
Letter of Map Revision (LOMR)	An official revision to a currently effective FIRM. A LOMR officially changes flood zone, floodplain and floodway designations, flood elevations and planimetric features.
Letter of Map Revision (Based On Fill) (LOMR-F)	A letter from FEMA stating that an existing structure or parcel of land that has been elevated by fill would not be inundated by the base flood.
Levee	A man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.
Levee System	A flood protection system, which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.
Lowest Floor	Means the lowest floor of the lowest enclosed area, including basement. An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor, provided that the enclosure does not violate applicable non-elevation design requirements.
Manufactured Home (mobile home)	A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term " <i>manufactured home</i> " does not include " <i>recreational vehicles</i> ".

Manufactured Home Park or Subdivision

A parcel or contiguous parcels of land divided into two or more manufactured home lots for rent or sale.

Market Value

For the purposes of determining substantial improvement, market value pertains only to the structure in question. It does not pertain to the land, landscaping or detached accessory structures on the property. For determining improvement, the value of the land must always be subtracted.

Acceptable estimates of market value can be obtained from the following sources:

1. Independent appraisals by a professional appraiser.
2. Detailed estimates of the structure's Actual Cash Value (used as a substitute for market value based on the preference of the community).
3. Property appraisals used for tax assessment purposes (Adjusted Assessed Value: used as a screening tool).
4. The value of buildings taken from NFIP claims data (used as a screening tool).
5. "Qualified estimates" based on sound professional judgment made by staff of the local building department or local or State tax assessor's office.

As indicated above, some market value estimates should only be used as screening tools to identify those structures where the substantial improvement ratios are obviously less than or greater than 50% (e.g., less than 40% or greater than 60%). For structures that fall between the 40% and 60% range, more precise market value estimates should be used.

Mobile Home

Having the same meaning as manufactured home.

North American Vertical Datum (NAVD)

A vertical control used as a reference for establishing various elevations within the floodplain based upon the General Adjustment of the North American Datum of 1988. Flood elevations on Digital Flood Insurance Rate Maps for Nevada communities are referenced to NAVD 88.

National Geodetic Vertical Datum (NGVD)

As corrected in 1929, is a vertical control used as a reference for establishing various elevations within the floodplain. Flood elevations on Flood Insurance Rate Maps published for Nevada communities prior to 2007 were typically referenced to NGVD 29.

Natural Grade

The grade unaffected by construction techniques such as fill, landscaping, or berming.

New Construction	Buildings for which the “start of construction” commenced on or after the effective date of an initial FIRM or after December 31, 1974, whichever is later, including any subsequent improvements.
New Manufactured Home (mobile home) Subdivision	A manufactured home park or subdivision for which the construction of construction of facilities for servicing the lots on which the manufactured homes are to be affixed including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads is completed on or after the effective date of these floodplain management regulation adopted by <i>{community or governing body}</i> .
Non-Residential	Includes, but is not limited to: small business concerns, churches, schools, farm buildings (including grain bins and silos), poolhouses, clubhouses, recreational buildings, mercantile structures, agricultural and industrial structures, warehouses, and hotels or motels with normal room rentals for less than 6 months duration.
Obstruction	Includes, but is not limited to, any dam, wall, wharf, embankment, levee, dike, pile, abutment, protection, excavation, channelization, bridge, conduit, culvert, building, wire, fence, rock, gravel refuse, fill, structure, vegetation or other material in, along, across or projecting into any watercourse which may alter, impede, retard or change the direction and or velocity of the flow of water, or due to its location, its propensity to snare or collect debris carried by the flow of water, or its likelihood of being carried downstream.
One-Hundred Year-flood	Having the same meaning as base flood.
Physical Map Revisions (PMR)	A reprinted NFIP map incorporating changes to floodplains, floodways, or flood elevations. Because of the time and cost involved to change, reprint, and redistribute an NFIP map, a PMR is usually processed when a revision reflects large scope changes.
Ponding Hazard	A flood hazard that occurs in flat areas when there are depressions in the ground that collect “ponds” of water. The ponding hazard is represented by the zone designation AH on the FIRM.
Post-FIRM Construction	Construction or substantial improvement that started on or after the effective date of the initial Flood Insurance Rate Map (FIRM) of the community or after December 31, 1974, whichever is later.
Pre-FIRM Construction	Construction or substantial improvement which started on or before December 31, 1974 or before the effective date of the initial Flood Insurance Rate Map (FIRM) of the community, whichever is later.

Principal Residence	A single family dwelling in which at the time of loss, the named insured or the named insured's spouse has lived for either (1) 80 percent of the calendar year, or (2) 80 percent of the period of ownership, if less than 1 year.
Principal Structure	A structure used for the principal use of the property as distinguished from an accessory use.
Program Deficiency	A defect in a community's floodplain management regulations or administrative procedures that impairs effective implementation of those floodplain management regulations.
Proper Openings For Enclosures (Applicable to Zones A, A1-A30, AE, AO, AH, AR, and AR Dual)	All enclosures below the lowest floor must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. A minimum of two openings, with positioning on at least two walls, having a total net area of not less than 1 square inch for every square foot of enclosed area subject to flooding must be provided. The
Public Safety/ Nuisance	Related to Variances of the ordinance. The granting of a variance must not result in anything which is injurious to safety or health of the entire community or neighborhood, or any number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay stream, canal, or basin.
Recreational Vehicle	A vehicle built on a single chassis, 400 square feet or less when measured at the largest horizontal projection, designed to be self-propelled or permanently towable by a light-duty track, and designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.
Riverine	Relating to, formed by, or resembling a river including tributaries, stream, brook, etc.
Sheet Flow Area	Having the same meaning as Area of Shallow Flooding.
Special Flood Hazard Area (SFHA)	Darkly shaded area on a Flood Hazard Boundary Map (FHBM) or a Flood Insurance Rate Map (FIRM) that identifies an area that has a 1- percent chance of being flooded in any given year (100-year floodplain). Over a 30-year period, the life of most mortgages, there is at least a 26 percent chance that this area will be flooded. The FIRM identifies these shaded areas as FIRM Zones A, AO, AH, A1-A30, AE, A99, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, V, V1-V30, and VE. See Flood Insurance Risk Zone Designations.
Start of Construction	Includes substantial improvement and other proposed new development and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within 180 days from the

date of the permit. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation, or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure	A walled and roofed building that is principally above ground and includes gas or liquid storage tanks and manufactured homes.
Substantial Damage	Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damage condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
Substantial Improvement	<p>Any reconstruction, rehabilitation, addition, or other proposed new development of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "<i>start of construction</i>" of the improvement. This term includes structures which have incurred "<i>substantial damage</i>," regardless of the actual repair work performed. The term does not, however, include either;</p> <ol style="list-style-type: none">1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure a safe living conditions, or2. Any alteration of a "<i>historic structure</i>" provided that the alteration will not preclude the structure's continued designation as a "<i>historic structure</i>."
Variance	A grant of relief from the requirements of this ordinance which permits construction in a manner that would otherwise be prohibited by this ordinance.
Violation	The failure of a structure or other development to be fully compliant with this ordinance. A structure or other development in a special flood hazard area, without an elevation certificate, other certifications or other evidence of compliance required in this ordinance is presumed to be in violation until such time as that documentation is provided.

**Water Surface
Elevation**

The height, in relation to the North American Vertical Datum (NAVD) of 1988, or (other datum, where specified) of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

Watercourse

A lake, river, creek, stream, wash, arroyo, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

SECTION 3 GENERAL PROVISIONS

3.1 LANDS TO WHICH THIS ORDINANCE APPLIES

This ordinance shall apply to all areas of special flood hazards within the jurisdiction of *{county or municipality}*.

3.2 BASIS FOR ESTABLISHING AREAS OF SPECIAL FLOOD HAZARD

The areas of special flood hazard identified by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency (FEMA) in the Flood Insurance Study (FIS) dated *{date}* and accompanying Flood Insurance Rate Maps (FIRM) and Flood Boundary and Floodway Maps (FBFM), dated *{date}*, and all subsequent amendments and or revisions, are hereby adopted by reference and declared to be a part of the ordinance. The FIS and attendant mapping is the minimum area of applicability of this ordinance and may be supplemented by studies for other areas which allow implementation of this ordinance and which are recommended to the *{governing body}* by the Floodplain Administrator. The FIS, FIRMs and FBFMs are on file at *{address, City Hall, County Administration Building, Department of Public Works, or other}*.

3.3 COMPLIANCE

No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this ordinance and other applicable regulations. Violations (including violations of conditions and safeguards established in connection with conditions) shall constitute a *{type of offense}*. Nothing herein shall prevent the *{governing body}* from taking such lawful action as is necessary to prevent or remedy any violation.

3.4 ABROGATION AND GREATER RESTRICTIONS

This ordinance is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this ordinance and other ordinances, easement, covenant, or deed restriction conflict or overlap, whichever imposed the more stringent restrictions or that imposing the higher standards, shall prevail.

3.5 INTERPRETATION

The interpretation and application of this ordinance, all provisions shall be:

- A. Considered as minimum requirements;
- B. Liberally construed in favor of the governing body; and
- C. Deemed neither to limit nor repeal any other powers granted under state statutes.

3.6 WARNING AND DISCLAIMER OF LIABILITY

The degree of flood protection required by this ordinance is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This ordinance does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This ordinance shall not create liability on the part of *{governing body}*, any officer or employee thereof, the State of Nevada, or the Federal Insurance Administration, Federal Emergency Management Agency, for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

3.7 DECLARATION OF PUBLIC NUISANCE.

Every new structure, building, fill, excavation or development located or maintained within any area of special flood hazard after *{date of first FIRM}* in violation of this ordinance is a public nuisance per se and may be abated, prevented or restrained by action of this political subdivision.

3.8 ABATEMENT OF VIOLATIONS

Within 30 days of discovery of a violation of this ordinance, the Floodplain Administrator shall submit a report to the *{governing body}* which shall include all information available to the Floodplain Administrator which is pertinent to said violation. Within 30 days of receipt of this report, the *{governing body}* shall either:

- A. Take any necessary action to effect the abatement of such violation; or
- B. Issue a variance to this ordinance in accordance with the provisions of **Section 6.0 (Variance Procedures)** herein; or
- C. Order the owner of the property upon which the violation exists to provide whatever additional information may be required for their determination. Such information must be provided to the *{administering body}* within 30 days of such order, and he shall submit an amended report to the Floodplain board with 20 days. At their next regularly scheduled public meeting, the governing body shall either order the abatement of said violation or they shall grant a variance in accordance with the provisions of **Section 6.0 (Variance Procedures)** herein.
- D. Submit to the Administrator of Federal Insurance Administration a declaration for denial of insurance, stating that the property is in violation of a cited statute or local law, regulation or ordinance, pursuant to section 1316 of the National Flood Insurance Act of 1968 as amended.

3.9 UNLAWFUL ACTS

- A. It is unlawful for any person to divert, retard or obstruct the flow of waters in any watercourse whenever it creates a hazard to life or property without securing the written authorization of the *{administering body}*. Where the watercourse is a delineated floodplain, it is unlawful to excavate or build any structure affecting the flow of waters without securing written authorization of the Floodplain Administrator.
- B. Any person violating the provisions of this section shall be guilty of a class 2 misdemeanor.

3.10 SEVERABILITY

This ordinance and the various parts thereof are hereby declared to be severable. Should any section of this ordinance be declared by the courts to be unconstitutional or invalid, such decisions shall not affect the validity of the ordinance as a whole, or any portion thereof other than the section so declared to be unconstitutional or invalid.

SECTION 4 ADMINISTRATION

4.1 DESIGNATION OF THE LOCAL FLOODPLAIN ADMINISTRATOR

{Name of administrator and title} is hereby appointed Local Floodplain Administrator to administer and implement this local ordinance by granting or denying floodplain development permits in accordance with its provisions.

4.2 ESTABLISHMENT OF DEVELOPMENT PERMIT

A floodplain development permit is hereby established for all construction and other development to be undertaken in areas of special flood hazard in *{county or municipality}* for the purpose of protecting its citizens from increased flood hazards and ensuring new development is constructed in a manner that minimizes its exposure to flooding. It shall be unlawful to undertake any development in an area of special flood hazard, as shown on the Flood Insurance Rate Map enumerated in **Sub-section 3.2 (Basis for Establishing Areas of Special Flood Hazard)**, without a valid floodplain development permit. Applications for a permit shall be made on forms furnished by the Local Floodplain Administrator and may include, but not be limited to: plans in duplicate drawn to scale showing the nature, location, dimensions, and elevation of the area in question, existing or proposed structures, fill, storage of materials, drainage facilities, and the location of the foregoing.

4.3 PERMIT APPLICATION

The applicant shall provide at least the following information, where applicable. Additional information may be required on the permit application forms.

- A. The proposed elevation in relation to mean sea level, of the lowest floor (including basement) of all residential and non-residential structures whether new or substantially improved to be located in Zones A, AI-A30, AE, and AH, if base flood elevations data are available.
- B. In Zone AO the proposed elevation in relation to mean sea level, of the lowest floor (including basement) and the elevation of the highest adjacent grade of all residential and nonresidential structures whether new or substantially improved.
- C. The proposed elevation in relation to mean sea level, to which any new or substantially improved non-residential structure will be floodproofed.
- D. A certificate from a licensed professional engineer or architect in the State of Nevada that any utility floodproofing meets the criteria in **Sub-section 5.2 (Standards for Utilities)**.
- E. A certificate from a licensed professional engineer or architect in the State of Nevada that any non-residential floodproofed structures meet the criteria in **Sub-section 5.1.5 (Nonresidential Floodproofing Requirements)**.

- F. When a watercourse will be altered or relocated as a result of the proposed development, the applicant must submit the maps, computations, and other materials required by the Federal Emergency Management Agency (FEMA) to process a Letter of Map Revision (LOMR) and pay any fees or other costs assessed by FEMA for processing the revision.
- G. A technical analysis, by a professional engineer licensed in the State of Nevada, showing the proposed development located in the special flood hazard area will not cause physical damage to any other property.
- H. When there is no base flood elevation data available for Zone A from any source, the base flood elevation data will be provided by the permit applicant for all proposed development of subdivisions, manufactured home and recreational vehicle parks in the special flood hazard areas, for all developments of 50 lots or 5 acres, whichever is less.

4.4 DUTIES AND RESPONSIBILITIES OF THE LOCAL FLOODPLAIN ADMINISTRATOR

Duties and responsibilities of the Local Floodplain Administrator shall include, but not limited to the following:

4.4.1 PERMIT APPLICATION REVIEW

The floodplain development permit will not be issued by the Local Floodplain Administrator until the following has been accomplished:

- A. Review all applications for completeness, particularly with the requirements of **Sub-section 4.3 (Permit Application)**, and for compliance with the provisions and standards of this ordinance.
- B. Review all subdivision and other proposed new development, including manufactured home and recreational vehicle parks to determine whether the proposed development site will be reasonably safe from flooding. When the proposed building site is located in the Special Flood Hazard Area, all new construction and substantial improvements will meet the applicable standards of **Sub-section 5.1 (Standards of Construction)**.
- C. Determine whether any proposed development in the Special Flood Hazard Area may result in physical damage to any other property to include stream bank erosion and any increase in velocities or that it does not adversely affect the carrying capacity of the areas where base flood elevations have been determined but a floodway has not been designated. For purposes of the ordinance, "adversely affects" means the cumulative effect of the proposed development when combined with all other existing and anticipated development will increase the water surface elevation of the base flood more than one foot at any point. To assist the Local

Floodplain Administrator in making this determination, the permit applicant may be required to submit additional technical analyses.

- D. Ensure all other required State and Federal permits have been received.
- E. For construction on an existing structure, determine if proposed construction constitutes substantial improvement or repair of a substantially damaged structure.

4.4.2 USE OF OTHER FLOOD DATA

- A. When the Federal Emergency Management Agency has designated Special Flood Hazard Areas on the community's Flood Insurance Rate Maps (FIRM) but has neither produced water surface elevation data nor identified a floodway, the Local Floodplain Administrator shall attempt to obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State or other source, including data developed pursuant to **Paragraph 4.4.6.I (Retaining Floodplain Development Documentation)**, as criteria for requiring new construction, substantial improvements or other proposed development meets the requirements of this ordinance.
- B. When base flood elevations are not available, the Local Floodplain Administrator may use flood information from any other authoritative source, such as historical data, to establish flood elevations within the Special Flood Hazard Areas. This information shall be submitted to the *{governing body}* for adoption.

4.4.3 ALTERATION OF WATERCOURSES

Prior to issuing a permit for any alteration or relocation of watercourse the Local Floodplain Administrator must:

- A. Have processed Letter of Map Revision (LOMR).
- B. Notify all adjacent communities, Nevada's National Flood Insurance Program Coordinator, and submittal of evidence of such notification to the Federal Insurance Administration, and the Federal Emergency Management Agency.
- C. Determine that the potential permit recipient has provided for maintenance within the altered or relocated portion of said watercourse so that the flood carrying capacity is not diminished.

4.4.4 INSPECTIONS

The Local Floodplain Administrator or designee shall make periodic inspections throughout the period of construction to monitor compliance with the requirements of the floodplain development permit or any variance provisions.

4.4.5 STOP WORK ORDERS

The Local Floodplain Administrator shall issue, or cause to be issued, a stop work for any floodplain development found non-compliant with the provisions of this ordinance or conditions of the development permit and all development found ongoing without a floodplain development permit. Disregard of a stop work order shall subject the violator to the penalties described in **Sub-section 3.3 (Compliance)** of this ordinance.

4.4.6 RETAINING FLOODPLAIN DEVELOPMENT DOCUMENTATION

The Local Floodplain Administrator shall obtain and retain for public inspection and have available for the National Flood Insurance Program coordinator or the Federal Emergency Management Agency representative conducting a Community Assistance Visit, the following:

- A. Floodplain development permits and certificates of compliance.
- B. Elevation Certificates with record of certification required by **Sub-section 5.1.4 (Lowest Floor Certification Requirements)**.
- C. Certifications required by **Sub-section 5.1.5(Nonresidential Floodproofing Requirements)**.
- D. Elevation Certificates with record of certification required by **Sub-section 5.1.6 (Requirements for Areas Below the Lowest Floor)**
- E. Elevation Certificates with record of certification of elevation required by **Sub-section 5.3 (Standards for Subdivisions)**.
- F. Certification required by **Sub-section 5.7 (Floodways)**
- G. Variances issued pursuant to **Section 6.0 (Variance Procedures)**.
- H. Notices required under **Sub-section 4.4.3 (Alteration of Watercourses)**.

4.4.7 MAP DETERMINATIONS

The Local Floodplain Administrator may make map interpretations where needed, in writing with appropriate documentation, as to the exact location of the boundaries of the areas of special flood hazard and where there appears to be a conflict between a mapped boundary and actual field conditions.

4.4.8 APPEALS

The *{governing body}* of *{county or municipality}* shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this ordinance.

4.4.9 SUBMISSION OF NEW TECHNICAL DATA TO FEMA

When *{community or municipality}* base flood elevations either increase or decrease resulting from physical changes affecting flooding conditions, as soon as practicable, but not later than six months after the date such information becomes available, *{community or municipality}* will submit the technical or scientific data to FEMA. Such submissions are necessary so that upon confirmation of the physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

SECTION 5 PROVISIONS FOR FLOOD HAZARD REDUCTION

5.1 STANDARDS OF CONSTRUCTION

In all areas of special flood hazard areas the following standards are required.

5.1.1 ANCHORING

- A. All new construction and substantial improvements shall be adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.
- B. All manufactured homes shall meet the anchoring standards of **Sub-section 5.5 (Standards for Manufactured Homes)**.

5.1.2 CONSTRUCTION MATERIALS AND METHODS

All new construction and substantial improvements shall be constructed;

- A. With materials and utility equipment resistant to flood damage;
- B. Using methods and practices that minimize flood damage;
- C. Ensure electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities are designed or located so as to prevent water from entering or accumulating within the components during conditions of flooding;
- D. Within Zones AH or AO, so that there are adequate drainage paths around structures on slopes to guide flood waters around and away from proposed structures.

5.1.3 ELEVATION REQUIREMENTS FOR LOWEST FLOOR

Residential construction, new or substantial improvements, shall have the lowest floor, including basement;

- A. In Zone AO, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least two feet above the highest adjacent grade if no depth number is specified.
- B. In Zone A, elevated to or above the base flood elevation, as determined by this community.
- C. In all other zones, elevated to or above the base flood elevation.

5.1.4 LOWEST FLOOR CERTIFICATION REQUIREMENTS

Upon completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered professional engineer or surveyor and verified by the community building inspector to be properly elevated. The certification shall be provided to the Floodplain Administrator using the current FEMA Elevation Certificate.

5.1.5 NONRESIDENTIAL FLOODPROOFING REQUIREMENTS

Nonresidential construction shall either be elevated to conform with **Sub-section 5.1.3 (Elevation Requirements for Lowest Floor)** or together with attendant utility and sanitary facilities;

- A. Will be floodproofed below the elevation recommended under **Sub-section 5.1.3 (Elevation Requirements for Lowest Floor)** so that the structure is watertight with walls substantially impermeable to the passage of water:
- D. Will have the structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy:
- C. Will be certified by a registered professional engineer or architect that the standards of **Sub-section 5.1.3 (Elevation Requirements for Lowest Floor)** are satisfied. The certification shall be provided to the Floodplain Administrator.

5.1.6 REQUIREMENTS FOR AREAS BELOW THE LOWEST FLOOR

All new construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall follow the guidelines in FEMA Technical Bulletins TB-1 (Openings in Foundation Walls and Walls of Enclosures, 2008) and TB-7 (Wet Floodproofing Requirements, 1993) and must either be certified by a licensed professional engineer or architect to meet or exceed the following minimum criteria;

- A. Must have a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding;
- B. The bottom of all such openings will be no higher than one foot above the lowest adjacent finished grade.

Openings may be equipped with louvers, valves, screens or other coverings or devices provided they permit the automatic entry and exit of floodwaters.

5.2 STANDARDS FOR UTILITIES

- A. All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.

- B. All new and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters or discharge from the systems into flood waters. Sanitary sewer and storm drainage systems for buildings that have openings below the base flood elevation shall be provided with automatic backflow valves or other automatic backflow devices that are installed in each discharge line passing through a building's exterior wall.
- C. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

5.3 STANDARDS FOR SUBDIVISIONS

- A. All preliminary subdivision proposals shall identify the flood hazard area and the elevation of the base flood.
- D. All subdivision plans will provide the elevation of proposed structures and pads. If the site is filled above the base flood, the final lowest floor and pad elevation shall be certified by a registered professional engineer or surveyor and provided to the Floodplain Administrator.
- E. All subdivision proposals shall be consistent with the need to minimize flood damage.
- D. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
- E. All subdivisions shall provide adequate drainage to reduce exposure to flood hazards.
- F. Additionally all subdivision proposals will demonstrate, by providing a detailed hydrologic and hydraulic analyses that the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the

5.2.1 STANDARDS FOR CRITICAL STRUCTURES

Critical structures are not authorized in a Special Flood Hazard Area, unless:

- A. All alternative locations in Flood Zone X have been considered and rejected.
- B. All alternative locations in Flood Zone Shaded X have been considered and rejected.

If the floodplain manager determines the only practical alternative location for the development of a new or substantially improved critical structure is in a Special Flood Hazard Area he **must**:

- A. Give public notice of the decision and reasons for the elimination of all alternative locations.

5.5 STANDARDS FOR MANUFACTURED HOMES

- A. All manufactured homes that are placed or substantially improved, within Zones A, AH, AE, and on the community's Flood Insurance Rate Map, on sites located:
 - 1. Outside of a manufactured home park or subdivision;
 - 2. In a new manufactured home park or subdivision;
 - 3. In an expansion to an existing manufactured home park or subdivision; or
 - 4. In an existing manufactured home park or subdivision on a site upon which a manufactured home has incurred "substantial damage" as a result of a flood:
 - a. Shall be elevated on a permanent foundation so that the lowest floor will be elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable State and local anchoring requirements for resisting wind forces.
- B. All manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A, AH, and AE on the community's Flood Insurance Rate Map that are not subject to the provisions of **Sub-section 5.4 (Standards for Critical Structures)** will be elevated so that either the:
 - 1. The bottom of structural frame or the lowest point of the manufactured home is at or above the base flood elevation; or
 - 2. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.
- C. Within Zone A, when no base flood elevation data is available, new and substantially improved manufactured homes shall have the floor elevated at least three feet above the highest adjacent grade.
- G. Within Zone AO, the floor for all new and substantially improved manufactured homes will be elevated above the highest adjacent grade at least as high as the depth number specified on the Flood Insurance Rate Map, or at least two feet if no

depth number is specified. Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a registered professional.

5.6 STANDARDS FOR RECREATIONAL VEHICLES

All recreational vehicles placed on sites within the floodplain on the community's Flood Insurance Rate Map will either;

- A. Be on the site for fewer than 180 consecutive days;
- B. Be fully licensed and ready for highway use. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions, or:
- C. Will meet the permit requirements of **Sub-section 4.3 (Permit Application)** and the elevation and anchoring requirements for manufactured homes in **Sub-section 5.5 (Standards for Manufactured Homes)**.

5.7 FLOODWAYS

Since the floodway is an extremely hazardous area due to the velocity of floodwaters, which carry debris, potential projectiles, and erosion potential, the following provisions apply.

- A. If a floodway has not been designated within the special flood hazard areas established in **Sub-section 3.2 (Basis for Establishing Areas of Special Flood Hazard)**, no new construction, substantial improvement, or other development (including fill) shall be permitted within Zones A1-30 and AE, unless it has been demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.
- B. In designated floodways located within the special flood hazard areas established in **Sub-section 3.2 (Basis for Establishing Areas of Special Flood Hazard)** encroachment shall be prohibited, including fill, new construction, substantial improvements, storage of equipment or supplies, and any other development within the adopted regulatory floodway; unless it has been demonstrated through hydrologic and hydraulic analyses, performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge, and the Federal Emergency Management Agency has issued a Conditional Letter of Map Revision (CLOMR).
- C. If **Sub-sections 5.7 A and B (Floodways)** have been satisfied; all proposed new development and substantial improvements will comply with all other applicable flood hazard reduction provisions of **Section 5 (Provisions for Flood Hazard Reduction)**.

SECTION 6.0 VARIANCE PROCEDURES

6.1 NATURE OF VARIANCES

The variance criteria set forth in this section of the ordinance are based on the general principal of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be granted for a parcel of property with physical characteristics so unusual that complying with the requirements of this ordinance would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners.

It is the duty of the *{governing body}* to help protect its citizens from flooding. This need is so compelling and the implications of the cost of insuring a structure built below flood level are so serious that variances from the flood elevation or from other requirements in the flood ordinance are quite rare. The long-term goal of preventing and reducing flood loss and damage can only be met if variances are strictly limited. Therefore, the variance guidelines provided in this ordinance are more detailed and contain multiple provisions that must be met before a variance can be properly granted. The criteria are designed to screen out those situations in which alternatives other than a variance are more appropriate.

If, upon review, the Administrator of FEMA determines that community practices indicate a pattern of issuing variances that is inconsistent with the objectives of sound flood plain management, the community may be suspended from the National Flood Insurance Program.

6.2 APPEAL BOARD

- A. In passing upon requests for variances, the *{governing body}* shall consider all technical evaluations, all relevant factors, standards specified in other sections of this ordinance, and;
1. The danger of materials being swept onto other lands and injuring others;
 2. The danger to life and property due to flooding or erosion damage;
 3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the existing individual owner and future owners of the property;
 4. The importance of the services provided by the proposed facility to the community;
 5. The necessity to the facility of a waterfront location, where applicable;

6. The availability of alternative locations for the proposed use which are not subject to flooding or erosion damage;
 7. The compatibility of the proposed use with existing and anticipated development;
 8. The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;
 9. The safety of access to the property in time of flood for ordinary and emergency vehicles;
 10. The expected heights, velocity, duration, rate of rise, and sediment transport of the floodwaters expected at the site;
 11. The cost of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water system, and streets and bridges.
- B. Any applicant to whom a variance is granted shall be given written notice over the signature of a community official that;
1. The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage;
 2. Such construction below the base flood level increases risks to life and property. It is recommended that a copy of the notice shall be recorded by the Floodplain Administrator in the Office of the *{county}* Recorder and shall be recorded in a manner so that it appears as an exception on the title of the affected parcel of land.
- C. The Floodplain Administrator will maintain a record of all variance actions, including justification for their issuance, and report such variances issued in its biennial report submitted to the Federal Insurance Administration, Federal Emergency Management Agency.

6.3 CONDITIONS FOR VARIANCES

- A. Generally, variances may be issued for new construction, substantial improvements, and other proposed new development to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing that the procedures of **Sections 4 (Administration) and 5 (Provisions for Flood Hazard Reduction)** of the ordinance have been fully considered. As the lot size increases beyond one-half acre, the technical justification required for issuing the variance increases.
- B. Variances may be issued for the repair or rehabilitation of "historic structures," as

defined in **Section 2 (Definitions)**, upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as an historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

- C. Variances shall not be issued within any mapped regulatory floodway if any increase in flood levels during the base flood discharge would result.
- D. Variances shall only be issued upon a determination that the variance is the "minimum necessary" considering the flood hazard, to afford relief. "Minimum necessary" means to afford relief with a **minimum** of deviation from the requirements of this ordinance. For example, in the case of variances to an elevation requirement, this means the *{governing body}* **need not grant** permission for the applicant to build at grade, or even to whatever elevation the applicant proposed, but only to that elevation which the *{governing body}* believes will both provide relief and preserve the integrity of the local ordinance.
- E. Variances shall only be issued upon a;
 - 1. Showing of good and sufficient cause;
 - 1. A determination that failure to grant the variance would result in exceptional "hardship," as defined in **Section 2 (Definitions)**, to the applicant;
 - 3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, or extraordinary public expense, create a nuisance, as defined in **Section 2 (Definitions)**, 'Public Safety/ Nuisance"), cause fraud or victimization, as defined in **Section 2 (Definitions)** of the public, or conflict with existing local laws or ordinances.
- F. Variances may be issued for new construction, substantial improvement, and other proposed new development necessary for the conduct of a functionally dependent use provided that the provisions of **Sub-section 6.3 A through E (Conditions for Variances)** are satisfied and that the structure or other development is protected by methods that minimize flood damages during the base flood and does not result in additional threats to public safety and does not create a public nuisance.
- G. Upon consideration of all the factors of **Section 6.2 (Appeal Board)** and the purposes of this ordinance, the *{governing body}* may attach such conditions to the granting of, variances as it deems necessary to further the purposes of this ordinance.

SECTION 7.0 MAP REVISION/AMENDMENT PROCEDURES

7.1 LETTERS OF MAP REVISION/AMENDMENT

National Flood Insurance Program regulations provide procedures to remove property from the 100-year floodplain or from a Special Flood Hazard Area. Amendments and revisions to community Flood Insurance Rate Maps can not adversely impact the floodplain or floodway delineation's of the level of the 100-year flood.

There are several procedures provided whereby the Federal Insurance Administrator will review information from the community, an owner, or a lessee of property where it is believed the property should not be included in a Special Flood Hazard Area.

Submissions to FEMA for revisions to effective Flood Insurance Studies (FISs) by individual and community requesters will require the signing of application/certification forms. These forms will provide FEMA with assurance that all pertinent data relating to the revision is included in the submittal. They will also assure that: (a) the data and methodology are based on current conditions; (b) qualified professional have assembled data and performed all necessary computations; and (c) all individuals and organizations impacted by proposed changes are aware of the changes and will have an opportunity to comment on them. FEMA procedures permit the following types of request:

A request for a revision to the effective FIS information (FIRM, FBFM, and / or FIS report) is usually a request that FEMA replace the effective floodplain boundaries, flood profiles, floodway boundaries, etc., with those determined by the requester. Before FEMA will replace the effective FIS information with the revised, the requester must: (a) provide all of the data used in determining the revised floodplain boundaries, flood profiles, floodway boundaries, etc.; (b) provide all data necessary to demonstrate that the physical modifications to the floodplain have been adequately designed to withstand the impacts of the 1% annual chance flood event and will be adequately maintained; (c) demonstrate that the revised information (e.g., hydrologic and hydraulic analyses and the resulting floodplain and floodway boundaries) are consistent with the effective FIS information.

Requests for amendments or revisions to FEMA maps must be reviewed and submitted to FEMA by the *{governing body}* of *{county or municipality}* with the applicant for a map amendment or revision required to prepare all the supporting information and appropriate FEMA forms.

The scientific or technical information to be submitted with these requests may include, but is not limited to the following:

- A. An actual copy of the recorded plat map bearing the seal of the appropriate recordation official County Clerk or Recorder of Deeds indicating the official recordation and proper citation, Deed or Plat Book Volume and Page Number, or an equivalent identification where annotation of the deed or plat book is not the practice.

- B. A topographical map showing;
 - 1. Ground elevation contours in relation to the NVGD (National Geodetic Vertical Datum).
 - 2. The total area of the property in question.
 - 3. The location of the structure or structures located on the property in question.
 - 4. The elevation of the lowest adjacent grade to a structure or structures.
 - 5. An indication of the curvilinear line which represents the area subject to inundation by a base flood. The curvilinear line should be based upon information provided by an appropriate authoritative source, such as a Federal Agency, Department of Water Resources, a County Water Control District, a County or City Engineer, a Federal Emergency Management Agency Flood Insurance Study, or a determination by a Registered Professional Engineer.
- C. A copy of the FHBM or FIRM indicating the location of the property in question.
- D. A certification by a Registered Professional Engineer or Licensed Land Surveyor that the lowest grade adjacent to the structure is above the base flood elevation.
- E. The completion of the appropriate forms in the Federal Emergency Management Agency's Packets, Amendments and Revisions To National Flood Insurance Program Maps (MT-1 FEMA FORM 81-87 Series and MT-2 FEMA FORM 81-89 Series).

APPENDIX

Appendices

1.0 ALLUVIAL FAN ADVISORY

Hazards of Alluvial Fan Development

Alluvial fans present a unique flood hazard environment where the combination of sediment, slope, and topography create an ultra hazardous condition for which elevation on fill will not provide reliable protection. Active alluvial fan flooding is characterized by flow path uncertainty combined with abrupt deposition and erosion. As a result, any area of an alluvial fan may be subject to intense flood hazards.

The technology of mathematically modeling the hydrodynamics of water and debris flows for alluvial fans is still in the early development stage. The Federal Emergency Management Agency (FEMA) has formulated a mapping procedure for the purpose of defining the likelihood of flood hazards on inundated alluvial fan zones to be used for flood insurance purposes and general floodplain regulation, referred to as the FEMA alluvial fan methodology.

An active alluvial fan flooding hazard is indicated by three related criteria:

- a. Flow path uncertainty below the hydrographic apex;
- b. Abrupt deposition and ensuing erosion of sediment as a stream or debris flow loses its competence to carry material eroded from a steeper, upstream source area; and
- c. An environment where the combination of sediment availability, slope, and topography creates an ultra hazardous condition for which elevation on fill will not reliably mitigate the risk.

Inactive alluvial fan flooding is similar to traditional riverine flood hazards, but occurs only on alluvial fans. It is characterized by flow paths with a higher degree of certainty in realistic assessments of flood risk or in the reliable mitigation of the hazard. Counter to active alluvial fan flooding hazards, an inactive alluvial fan flooding hazard is characterized by relatively stable flow paths. However, areas of inactive alluvial fan flooding, as with active alluvial fan flooding, may be subject to sediment deposition and erosion, but to a degree that does not cause flow path instability and uncertainty.

An alluvial fan may exhibit both active alluvial fan flooding and inactive alluvial fan flooding hazards. The hazards may vary spatially or vary at the same location, contingent on the level of flow discharge. Spatially, for example, upstream inactive portions of the alluvial fan may distribute flood flow to active areas at the distal part of the alluvial fan. Hazards may vary at the same location, for example, with a flow path that may be stable for lower flows, but become unstable at higher flows.

More detailed information can be found at FEMA's website: "Guidelines for Determining Flood Hazards on Alluvial Fans" at http://www.fema.gov/fhm/ft_afgd2.shtm#1.

Alluvial Fans and LOMR's

The NFIP does not allow for the removal of land from the floodplain based on the placement of fill (LOMR-F) in alluvial fan flood hazard areas. The NFIP will credit a major structural flood control project, through the LOMR process, that will effectively eliminate alluvial fan flood hazards from the protected area. Details about map revisions for alluvial fan areas can be found in the Code of Federal Regulations at Title 44, Part 65.13.

2.0 HIGHER STANDARDS RECOMMENDED BY THE STATE OF NEVADA

This model ordinance meets the minimum standards required to participate in the National Flood Insurance Program. Community adoption of higher standards can be applied towards credit under the Community Rating System (CRS) program and result in reduced premiums for all flood insurance policy holders within the entire community. The State of Nevada recommends:

A. Daily Fine

In **Sub-section 3.3 (Compliance)**, it is recommended that the penalties include a substantial daily fine for each day the violation continues. Each day the violation continues is a separate violation and subject to the same fine for each violation.

B. Determining BFE's in Unnumbered A Zones.

Insert/add to **Subsection 4.4.2 (Use of Other Flood Data)** the following:

“C. When base flood elevations are not available from any other source, base flood elevations shall be obtained using one of two methods from the FEMA publication, FEMA 265, “Managing Floodplain Development in Approximate Zone A Areas – A Guide for Obtaining and Developing Base (100-year) Flood elevations,” dated July 1995.”

C. Limiting Increase in Base Flood Elevation

Replace “one foot” with “one-half (0.5) foot” in **Sub-section 4.4.1 C (Permit Application Review)** to read:

“. . . For purposes of the ordinance, “adversely affects” means the cumulative effect of the proposed development when combined with all other existing and anticipated development will increase the water surface elevation of the base flood more than one-half foot at any point. . . .”

D. Freeboard

The State of Nevada recommends that the lowest floor be elevated above the highest adjacent grade to a height exceeding the depth number specified in feet on the FIRM by at least two feet, or elevated at least four feet above highest adjacent grade if no depth number is specified.

To elevate at least two feet above the minimum required base flood elevation, make the following changes:

1. Replace **Sub-section 5.1.3 A (Elevation Requirements for Lowest Floor)** with:

“In Zone AO, elevated above the highest adjacent grade to a height 2 feet above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest adjacent grade if no depth number is specified.”

2. Modify **Sub-sections 5.1.3 B and 5.1.3 C (Elevation Requirements for Lowest Floor)** by

replacing “elevated to or above” with “elevated 2 feet above.”

3. Modify **Sub-section 5.5 A 4 a (Standards for Manufactured Homes)** by replacing “to or above” with “at least 2 feet above.”
4. Modify **Sub-section 5.5 B (Standards for Manufactured Homes)** by replacing “at or above” with “at least 2 feet above.”
5. Replace **Sub-section 5.5 D (Standards for Manufactured Homes)** with:

“Within Zone AO, the floor of all new and substantially improved manufactured homes will be elevated above the highest adjacent grade at least two feet above the depth number specified on the FIRM, or at least three feet above the highest adjacent grade if no depth number is specified.”

E. Determining Market Value of Existing Structures.

Replace the “Market value” definition in **Section 2 (Definitions)** with:

“Market Value For the purposes of determining substantial improvement, market value pertains only to the structure in question. It does not pertain to the land, landscaping or detached accessory structures on the property. For determining improvement, the value of the land must always be subtracted.

Market Value shall be determined by estimating the cost to replace the structure in new condition and adjusting that cost figure by the amount of depreciation which has accrued since the structure was constructed.

1. The cost of replacement of the structure shall be based on a square foot cost factor determined by reference to a building cost estimating guide recognized by the building construction industry.
2. The amount of depreciation shall be determined by taking into account the age and physical deterioration of the structure and functional obsolescence as approved by the floodplain administrator, but shall not include economic or other forms of external obsolescence.

Use of replacement costs or accrued depreciation factors different from those contained in recognized building cost estimating guides may be considered only if such factors are included in a report prepared by an independent professional appraiser and supported by a written explanation of the differences.”

F. Increased Cost of Compliance (ICC) Coverage—Repetitive Loss Provisions.

This provision allows communities the opportunity for flood insurance policy holders to have ICC coverage made available in repetitive loss situations.

Modify the definition of “Substantial damage” in **Section 2 (Definitions)** as follows:

**“Substantial
Damage**

Substantial Damage includes:

1. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred; or
2. Flood-related damages sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred. This is also known as “repetitive loss.”

G. Non-conversion of Enclosed Areas below the Lowest Floor.

Insert/add the following section after **Section 4.4.9 (Submission of New Technical Data to FEMA)**:

“4.4.10 NON-CONVERSION OF ENCLOSED AREAS BELOW THE LOWEST FLOOR

To ensure that the areas below the BFE shall be used solely for parking vehicles, limited storage, or access to the building and not be finished for use as human habitation without first becoming fully compliant with the floodplain management ordinance in effect at the time of conversion, the Floodplain Administrator shall:

- A. Determine which applicants for new construction and/or substantial improvements have fully enclosed areas below the lowest floor that are 5 feet or higher;
- B. Enter into a “NON-CONVERSION AGREEMENT FOR CONSTRUCTION WITHIN FLOOD HAZARD AREAS” or equivalent with the *{name of county or municipality}*. The agreement shall be recorded with the *{name of county}* County Recorder as a deed restriction. The non-conversion agreement shall be in a form acceptable to the Floodplain Administrator and County Counsel; and
- C. Have the authority to inspect any area of a structure below the base flood elevation to ensure compliance upon prior notice of at least 72 hours.”

3.0 SPECIAL REQUIREMENTS

A. Crawlspace Construction

Communities with construction practices that result in crawl spaces with interior floors below grade have historically been in violation of the NFIP requirements. FEMA Technical Bulletin 11-01 (Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, 2001) now provides accommodation for these practices. The following section provides for adoption of the minimum crawlspace construction standards defined in FEMA Technical Bulletin 11-01.

Note that even after adopting these construction standards, buildings that have below-grade crawlspaces will continue to have higher flood insurance premiums than buildings with interior elevation at or above the lowest adjacent grade.

Add the following section after **Section 5.1.6 (Requirements for Areas below the Lowest Floor)**:

“5.1.[X] CRAWLSPACE CONSTRUCTION

This sub-section applies to buildings with crawl spaces up to 2 feet below grade. Below-grade crawl space construction in accordance with the requirements listed below will not be considered basements.

- A. The building must be designed and adequately anchored to resist flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. Crawl space construction is not allowed in areas with flood velocities greater than 5 feet per second unless the design is reviewed by a qualified design professional, such as a registered architect or professional engineer;
- B. The crawl space is an enclosed area below the BFE and, as such, must have openings that equalize hydrostatic pressures by allowing for the automatic entry and exit of floodwaters. For guidance on flood openings, see FEMA Technical Bulletin TB-1 (Openings in Foundation Walls and Walls of Enclosures, 2008);
- F. Crawl space construction is not permitted in V zones. Open pile or column foundations that withstand storm surge and wave forces are required in V zones;
- G. Portions of the building below the BFE must be constructed with materials resistant to flood damage. This includes not only the foundation walls of the crawl space used to elevate the building, but also any joists, insulation, or other materials that extend below the BFE; and
- H. Any building utility systems within the crawl space must be elevated above BFE or designed so that floodwaters cannot enter or accumulate within the system components during flood conditions.
- I. Requirements for all below-grade crawl space construction, in addition to the

above requirements, to include the following:

- J. The interior grade of a crawl space below the BFE must not be more than 2 feet below the lowest adjacent exterior grade (LAG), shown as D in figure 3 of FEMA Technical Bulletin 11-01(Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, 2001);
- K. The height of the below-grade crawl space, measured from the interior grade of the crawl space to the top of the crawl space foundation wall must not exceed 4 feet (shown as L in figure 3 of Technical Bulletin 11-01, Crawlspace Construction for Buildings Located in Special Flood Hazard Areas, 2001) at any point;
- L. There must be an adequate drainage system that removes floodwaters from the interior area of the crawl space within a reasonable period of time after a flood event, not to exceed 72 hours; and
- M. The velocity of floodwaters at the site should not exceed 5 feet per second for any crawl space. For velocities in excess of 5 feet per second, other foundation types should be used.”

B. Garages and Accessory Structures

The Standards of Construction defined in **Section 5 (Provisions for Flood Hazard Reduction)** apply to all structures built in special flood hazard areas including garages or any accessory structures. Addition of this section to a community’s floodplain management ordinance contains the definition for accessory structures and construction requirements to allow for the permitting of an accessory structure or detached garage within special flood hazard areas **without a variance**.

Add the following definitions to **Section 2 (Definitions)**:

“Accessory Structure A structure used solely for parking (two-car detached garages or smaller) or limited storage (small, low-cost sheds).”

Add the following section after **Section 5.1.6 (Requirements for Areas below the Lowest Floor)**:

“5.1.[X] GARAGES AND LOW COST ACCESSORY STRUCTURES

- A. Attached Garages
 - 2. A garage attached to a residential structure, constructed with the garage floor slab below the BFE, must be designed to allow for the automatic entry of flood water in accordance with **Section 5.1.6 (Requirements for Areas below the Lowest Floor)**. Areas of the garage below the BFE must be constructed with flood resistant material in accordance with 5.1.2.A.
 - 3. A garage attached to a nonresidential structure must meet the above requirements or be floodproofed. For guidance on below grade parking

areas, see FEMA Technical Bulletin TB-6 (Below-Grade Parking Requirements, 1993).

B. Detached garages and accessory structures.

1. Accessory structures” used solely for parking (2 car detached garages or smaller) or limited storage (small, low-cost sheds), as defined in **Section 2 (Definitions)**, may be constructed such that its floor is below the base flood elevation (BFE), provided the structure is designed and constructed in accordance with the following requirements:
 - b) Use of the accessory structure must be limited to parking or limited storage;
 - c) The portions of the accessory structure located below the BFE must be built using flood-resistant materials;
 - d) The accessory structure must be adequately anchored to prevent flotation, collapse and lateral movement;
 - e) Any mechanical and utility equipment in the accessory structure must be elevated or floodproofed to or above the BFE;
 - f) The accessory structure must comply with floodplain encroachment provisions in **Section 5.7 (Floodways)**; and
 - g) The accessory structure must be designed to allow for the automatic entry of flood waters in accordance with **Section 5.1.6 (Requirements for Areas below the Lowest Floor)**.
2. Detached garages and accessory structures not meeting the above standards must be constructed in accordance with all applicable standards in **Section 5.1.6 (Requirements for Areas below the Lowest Floor)**.”

C. **Mudslide (i.e., Mudflow) Prone Areas (Zone M)**

Add the following definitions to **Section 2 (Definitions)**:

“Area of Special Mudslide (i.e. Mudflow) Hazard	The area subject to severe mudslides (i.e., mudflows). This area is designated as Zone M on the Flood Insurance Rate Map (FIRM).”
“Flood Insurance Risk Zone Designations	Zone M Area of special mudslide or mudflow hazards.”
“Mudslide (i.e., Mudflow	Is a condition where there is a river, flow or inundation of liquid mud down a hillside usually as a result of a dual condition of loss of brush cover, and the subsequent accumulation of water on the

ground preceded by a period of unusually heavy or sustained rain. A mudslide may occur as a distinct phenomenon while a landslide is in progress, and will be recognized as such by the Federal Insurance Administrator only if the mud flow, and not the landslide, is the proximate cause of damage that occurs.”

“Mudslide Prone Area An area with land surfaces and slopes of unconsolidated material where the history, geology, and climate indicate a potential for mudflows.”

Add the following to **Section 4.4.6 (Retaining Floodplain Development Documentation)**:

“I. Reports required by **Sub-section 5.[X] (Mudslide Prone Areas)**.”

Add the following section after **Section 5.7 (Floodways)**:

“5.[X] MUDSLIDE (i.e., MUDFLOW) PRONE AREAS

- A. All permit applications will be reviewed by the Floodplain Administrator to determine if the proposed development will be located within a mudslide area.
- B. The reviewing process will determine if the proposed site and improvements will be reasonably safe from mudslide hazards. Factors to be considered in making this determination include but are not limited to the following;
 - 1. Type and quality of soils.
 - 2. Evidence of ground water or surface water problems.
 - 3. Depth and quality of any fill.
 - 4. The overall slope of the site.
 - 5. The weight that any proposed structure will impose on the slope.
- C. When a proposed development is located in an area that may have mudslide hazards, the following will be the minimum requirements;
 - 2. A site investigation and further review be made by persons qualified in geology and soils engineering.
 - 2. The proposed grading, excavations, new construction, and substantial improvements are adequately designed and protected against mudslide damages.
 - 3. The proposed grading, excavations, new construction and substantial improvements do not aggravate the existing hazard by creating either on-site or off-site disturbances.

4. Drainage, planting, watering, and maintenance be such as not to endanger slope stability.
- N. When a proposed development is determined to be within a mudslide hazard area, the following requirements will include but not be limited to;
1. Adopting and enforcing a grading ordinance in accordance with data supplied by the Federal Emergency Management Agency.
 2. Regulate the location of foundation systems and utility systems of new construction and substantial improvements.
 3. Regulate the location, drainage and maintenance of all excavations, cuts and fills and planted slopes.
 4. Provide special requirements for protective measures including but not necessarily limited to retaining walls, buttress fills, sub drains, diverted terraces, and benching.
 5. Require engineering drawings and specifications to be submitted for all corrective measures, accompanied by supporting soils engineering and geology reports.”

D. Erosion Prone Areas (Zone E)

Add the following definitions to **Section 2 (Definitions)**:

“Area of Special Flood-related Erosion Hazard	The land within a community which is most likely to be subject to severe flood related erosion losses. This area may be designated as Zone E on the Flood Insurance Rate Map (FIRM). “
‘Flood Insurance Risk Zone Designations	Zone E Area of special flood-related erosion hazards.”
“Flood-related Erosion	The collapse or subsidence of land along a stream or wash, the shore of a lake or other body of water as a result of undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding.”
“Flood-related Erosion Prone Area	A land area adjoining the shore of a lake or other body of water, which due to the composition of the shoreline or bank and high water levels or wind-driven currents, is likely to suffer flood-related erosion damage.”

Add the following section after **Section 5.7 (Floodways)**:

“5.[X] FLOOD-RELATED EROSION-PRONE AREAS

- A. All permit applications will be reviewed by the Floodplain Administrator to determine if the proposed development will be located within a special flood-related erosion hazard area.
- B. The reviewing process will determine if the proposed site alterations and improvements will be reasonably safe from flood-related erosion and will not cause flood-related erosion hazards or otherwise aggravate the existing flood-related erosion hazard.
- C. When the proposed development is found to be in the path of flood-related erosion or to increase the erosion hazard, require the improvement to be relocated or adequate protective measures to be taken which will not aggravate the existing erosion hazard.
- D. When it has been determined the proposed development is in a special flood-related erosion hazard, as delineated Zone E on the community FIRM, require;
 - 1. A setback for all new development from the lake, bay, riverfront or other body of water, to create a safety buffer consisting of a natural vegetative or contour strip. This buffer will be designated according to the flood-related erosion hazard and erosion rate, in conjunction with the anticipated "useful life" of structures, and depending upon the geologic, hydrologic, topographic and climatic characteristics of the community's land. The buffer may be used for suitable open spaces purposes, such as for agricultural, forestry, outdoor recreation and wildlife habitat areas, and for other activities using temporary and portable structures only.”